Hall Ticket Number :										

R-20

Code: 20AC15T

I B.Tech. I Semester Supplementary Examinations Dec 2023 / Jan 2024

Communicative English

(Common to CE, ME, CSE, AI&DS, CSE(AI) and CSE(DS))

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two marks.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

		CO	BL
1.	Answer ***all*** the following short answer questions (5 X 2 = 10M)		
a)	What emotions did Hazlitt's son express when he was moved to a new school?	**CO1**	**L2**
b)	What is the poem "The Brook" about?	**CO2**	**L2**
c)	At what age the prince 'Dimitri' came into the throne of 'Kedaria'?	**CO1**	**L2**
d)	When was Mohammad Yunus awarded 'Nobel Peace Prize'?	**CO1**	**L2**
e)	What is the name of the training academy established by Mrinalini Sarabhai?	**CO2**	**L1**

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	BL
	UNIT-I			
2.	What does the author say about despising people? What justification does he provide for his advice?	12M	CO1	L2
	OR			
3. a)	**Change the following statements into questions:** i) My grandparents live with my uncle. ii) He had a strange experience yesterday. iii) Her mother has bought a nice gift for her. iv) Jack has bought an interesting book from the library. v) They have accepted the invitation. vi) My neighbor is a kind-hearted lady.	6M	CO3	L4
b)	**Identify the Parts of Speech of the underlined words in the following sentences:** i) The car moved <u>slowly</u> around the <u>track.</u> ii) <u>He</u> walked <u>through</u> the park. iii) They waited anxiously <u>for</u> the game to <u>begin.</u>	6M	CO3	L4
	UNIT-II			
4.	How has the poet drawn parallelism between the journey of the brook and the life of man?	12M	CO2	L2

OR

5. **Fill in the blanks with the appropriate article or no article:**
   i) This is ____ interesting book.
   ii) My father is ____ police office.
   iii) She picked me at ____ airport.
   iv) Experts say that ____coffee is good for health.
   v) They are having ____ party next week.
   vi) He is wearing ____ black suit to the wedding.
   vii) I am looking for ____ job in marketing.
   viii) He climbed ____ Mount Everest.
   ix) The doctor prescribed ____medicine for my headache.
   x) We bought some cheese and jam._____cheese was delicious.
   xi) Our library has three copies of ____Mahabharata.
   xii) This is ____ great service to humanity. 12M CO4 L3

UNIT-III

6. How does Dimitri escape himself from the death trap? 12M CO1 L3

OR

7. Write a detailed note on Summarizing Skills. 12M CO5 L4

UNIT-IV

8. Why did Mohammed Yunus establish Grameen Bank and how it helped the rural women in Bangladesh? 12M CO2 L1

OR

9. **Develop the following hints into a meaningful passage.**
   Without hard work - no knowledge - all things – difficult initially – climbing mountains –get arduous training live in camps – minimum food – more hardships – risking life – lesson – no achievement without self –sacrifice – adequate – preparation – high achievers – overcome more difficulties. 12M CO5 L4

UNIT-V

10. Narrate the inspiring story of Mrinalini Sarabhai and describe the left by her for future generation. 12M CO4 L3

OR

11. Write a letter to the District Magistrate, drawing his attention to the nuisance of loud speakers in your locality. 12M CO5 L4

*** End ***

Hall Ticket Number :										

R-20

Code: 20A312T

I B.Tech. I Semester Supplementary Examinations Dec 2023 / Jan 2024

Engineering Drawing

(Common to CE, EEE & ECE)

Max. Marks: 70 Time: 3 Hours

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Answer *any five* questions by choosing one question from each unit (5 x 14 = 70 Marks)

		Marks	CO	Blooms Level
	UNIT–I			
2.	P, Q and R are the centres of three circles of diameters 75mm, 45 mm and 30 mm respectively. PQ = 95 mm, QR=50 mm and PR = 75 mm. Draw a circle touching the three circles.	14M	CO1	L2
	OR			
3.	Q is a diameter of a circle and is 75 mm long. A piece of string is tied tightly round the circumference of the semi-circle starting from P and finishing at Q. The end Q is then untied and the string, always kept taut, is gradually unwound from the circle, until it lies along the tangent at P. Draw the curve traced by the moving extremity of the string.	14M	CO1	L2
	UNIT–II			
4.	A line PQ is 75 mm long and lies in an auxiliary inclined plane (A.LP.) which makes an angle of 45° with the H.P. The front view of the line measures 55 mm and the end P is in the V.P. and 20 mm above the H.P. Draw the projections of PQ and find (i) its inclinations with both the planes and (ii) its traces.	14M	CO2	L2
	OR			
5.	A line AB is in the first quadrant. Its end A and B are 20 mm and 60 mm in front of the V.P. respectively. The distance between the end projectors is 75 mm. The line is inclined at 30° to the H.P. and its H.T. is 10 mm above xy. Draw the projections of AB and determine its true length and the V.T.	14M	CO2	L2
	UNIT–III			
6.	Draw the projections of a circle of 50 mm diamete1~ having its plane vertical and inclined at 30° to the V.P. Its centre is 30mm above the H.P. and 20 mm in front of the V.P. Show also its traces.	14M	CO3	L2
	OR			
7.	A square ABCO of 50 mm side has its corner A in the H.P., its diagonal AC inclined at 30° to the H.P. and the diagonal BO inclined at 45° to the V.P. and parallel to the H.P. Draw its projections.	14M	CO3	L2

UNIT–IV

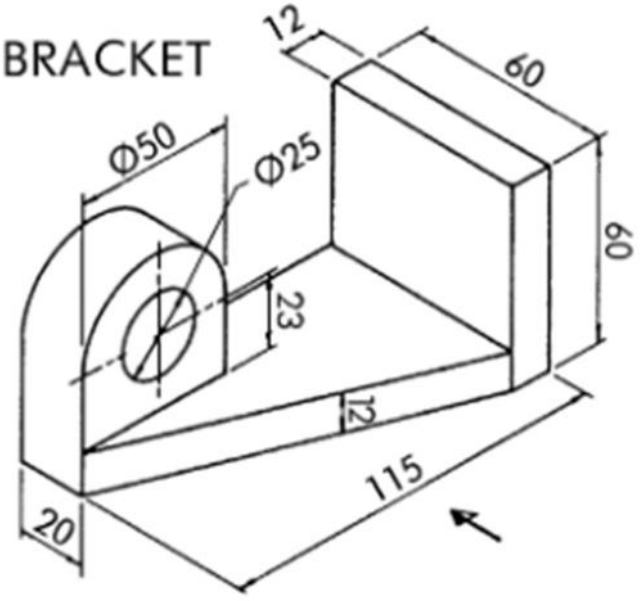
8. Draw the projections of a pentagonal prism, base 25 mm side and axis 50 mm long, resting on one of its rectangular faces on the H.P., with the axis inclined at 45^0 to the V.P. 14M CO4 L3

OR

9. A thin 30^0-60^0 set square has its longest edge in the VP and inclined at 30^0 to HP. Its surface makes an angle of 45^0 with the VP. Draw the projections. 14M CO4 L3

UNIT–V

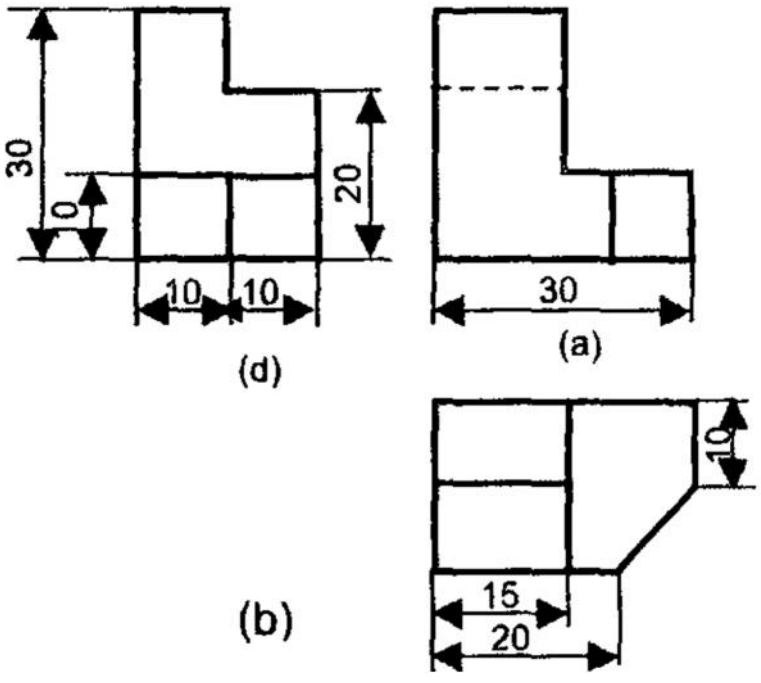
10. Draw the front view, top view and right side view for the following figure



14M CO5 L4

OR

11. Draw the isometric view for the following figure



14M CO5 L4

*** End ***

Hall Ticket Number :										

R-20

Code: 20AC14T

I B.Tech. I Semester Supplementary Examinations Dec 2023 / Jan 2024

Engineering Chemistry

(Common to CE & ME)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two marks.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

		CO	BL
1.	Answer ***all*** the following short answer questions (5 X 2 = 10M)		
a)	Distinguish between hard water and soft water	CO1	L2
b)	What are fuel cells? Give examples	CO2	L1
c)	How is vinyl chloride typically prepared for the synthesis of polyvinyl chloride?	CO3	L1
d)	What are the essential constituents of cement?	CO4	L1
e)	What is a sol in the context of the Sol-Gel method?	CO5	L1

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	BL
		UNIT-I			
2.		Discuss the ion exchange process for water softening with a neat diagram.	12M	CO1	L4
		OR			
3.		What is potable water? What are the specifications of potable water?	12M	CO1	L2
		UNIT-II			
4.	a)	Describe the construction and working principle of a galvanic cell. Give their electrode and net cell reactions?	6M	CO2	L2
	b)	Mention the electrochemical conventions of an electrochemical cell	6M	CO2	L1
		OR			
5.		Define Dry corrosion. Discuss its mechanism with an example	12M	CO2	L2
		UNIT-III			
6.	a)	Explain the differences between higher and lower calorific values of a fuel.	6M	CO3	L2
	b)	Calculate the gross and net calorific value of coal having the following compositions Carbon=85%, hydrogen=8%, sulphur=1%, nitrogen=2%, ash-4%, latent heat of steam=587 cal/g.	6M	CO3	L3
		OR			
7.		Discuss the preparation, properties and applications of Bakelite	12M	CO3	L2
		UNIT-IV			
8.		Describe the classification of lubricants based on their natural state. Provide examples for each type.	12M	CO4	L2
		OR			
9.		Describe the distinguishing features between particle-reinforced composites, fiber-reinforced composites, and structural composites.	12M	CO4	L2
		UNIT-V			
10.		Demonstrate how XRD can be used to determine the crystal structure and crystallographic orientation of nanoparticles.	12M	CO5	L3
		OR			
11.	a)	Describe the classification of Nanomaterials giving examples to each type	6M	CO5	L2
	b)	What are the advantages of sol-gel process of synthesizing nanomaterials	6M	CO5	L2

*** End ***

Hall Ticket Number :										

R-20

Code: 20A511T

I B.Tech. I Semester Supplementary Examinations Dec 2023 / Jan 2024

Problem Solving through C Programming

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two marks.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

		CO	BL
1.	Answer ***all*** the following short answer questions (5 X 2 = 10M)		
a)	What is the size of integer data type?	CO1	L1
b)	Differentiate do-while and while statements.	CO2	L2
c)	List the various storage classes in C.	CO3	L1
d)	What is a void pointer?	CO4	L1
e)	Give various modes of opening a file.	CO5	L1

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	BL
	UNIT-I			
2. a)	What are the various steps to solve a problem? Explain them by taking an example.	6M	CO1	L1,L2
b)	Draw a flow chart to find the largest of three numbers in C.	6M	CO1	L3
	OR			
3. a)	Explain the Structure of C program.	6M	CO1	L2,L3
b)	How many keywords does C Language support? Explain.	6M	CO1	L1,L2
	UNIT-II			
4. a)	Explain Nested if else statements with an example.	6M	CO2	L2
b)	Write a C program to find the smallest number among three numbers.	6M	CO2	L1,L3
	OR			
5. a)	Describe about two dimensional arrays, initializing the two dimensional arrays and accessing elements in such arrays.	6M	CO2	L2
b)	Write a program to find an element present in a given array by using any one search technique.	6M	CO2	L1,L3

UNIT-III

6.		Explain briefly about string handling functions in C with examples.	12M	CO3	L2

OR

7.	a)	Differentiate call by value and call by reference with example	6M	CO3	L1,L3
	b)	Illustrate the concept of recursion.	6M	CO3	L2

UNIT-IV

8.	a)	Define a pointer. How to initialize and declare pointer variables? Explain the same with examples	6M	CO4	L1,L2
	b)	Explain how to pass one dimensional arrays to functions	6M	CO4	L2

OR

9.	a)	Write advantages and disadvantages of pointers	6M	CO4	L1,L3
	b)	Write a C program to find the greatest and smallest element in an array using pointers.	6M	CO4	L1,L3

UNIT-V

10.	a)	Differentiate between structures and unions, and write the syntax for nested structures	6M	CO5	L1,L2
	b)	What is an enumerated data type? Explain with example.	6M	CO5	L1,L2

OR

11.	a)	Explain the syntax for Nested structures. Describe Nested structures with an example.	6M	CO5	L2
	b)	Write a C program to reverse the contents of a file	6M	CO5	L1,L2

*** End ***

Hall Ticket Number :										

R-20

Code: 20AC11T

I B.Tech. I Semester Supplementary Examinations Dec 2023 / Jan 2024

Algebra and Calculus

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two marks.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

1. Answer ***all*** the following short answer questions (5 X 2 = 10M) CO BL

a) Define the rank of the Matrix CO1 L1

b) Define index and signature of a Quadratic form CO2 L1

c) If $x = r\cos\theta, y = r\sin\theta$ then find $\frac{\partial(x,y)}{\partial(r,\theta)}$ CO3 L3

d) Evaluate $\int_0^1 \int_0^2 \int_0^2 xy^2z \, dz \, dy \, dx$ CO4 L5

e) Define Gamma function CO5 L1

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

Marks CO BL

UNIT-I

2. a) Reduce the matrix to Echelon form and find its rank

$$\begin{bmatrix} -1 & -3 & 3 & -1 \\ 1 & 1 & -1 & 0 \\ 2 & -5 & 2 & -3 \\ -1 & 1 & 0 & 1 \end{bmatrix}$$ 6M CO1 L3

b) Investigate the values of λ and μ so that the equations $2x+3y+5z=9$, $7x+3y-2z=8$, $2x+3y+\lambda z=\mu$, have (i) no solution, (ii) a unique solution and (iii) an infinite number of solutions. 6M CO1 L3

OR

3. Find for what value of λ the equations $x+y+z=1$, $x+2y+4z=\lambda$, $x+4y+10z=\lambda^2$ have a solution and solve them completely in each case. 12M CO1 L3

UNIT-II

4. State and verify Cayley-Hamilton theorem for the matrix $A=\begin{bmatrix} 1 & 4 \\ 2 & 3 \end{bmatrix}$ and hence find A^4. 12M CO2 L2

OR

5. If $A = \begin{bmatrix} 3 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$ then find the matrix P (model matrix) which transforms the matrix A to a Diagonal matrix. 12M CO2 L3

UNIT-III

6. a) Using Maclaurin's series, expand $\log(1+x)$ in powers of x. 6M CO3 L3

b) Find the minimum value of $x^2+y^2+z^2$ given $x+y+z=3a$ 6M CO3 L3

OR

7. a) If $x+y+z=u, y+z=uv, z=uvw$, then evaluate $\frac{\partial(x,y,z)}{\partial(u,v,w)}$ 6M CO3 L5

b) If $x+y+z=u, y$ Find the maximum value of $x^m y^n z^p u^r$ under the condition that $x+y+z=a$ 6M CO3 L3

UNIT-IV

8. Evaluate the integral by changing the order of integration $\int_0^{4a}\int_{\frac{x^2}{4a}}^{2\sqrt{ax}} dy\,dx$ 12M CO4 L5

OR

9. Evaluate $\int_0^{c}\int_0^{}\int_0^{x+y} e^{x+y+z}\,dz\,dy\,dx$ 12M CO4 L5

UNIT-V

10. a) Show that $\Gamma\left(\frac{1}{2}\right)=\sqrt{\pi}$ 6M CO5 L2

b) Evaluate $\int_0^{1} x^{\frac{3}{2}}(1-x^2)^{\frac{5}{2}}dx$ 6M CO5 L5

OR

11. a) State and prove relation between Beta and Gamma functions 6M CO5 L2

b) Evaluate $\int_0^{\infty} \frac{x^2}{\sqrt{1-x^5}}dx$ in terms of Beta function 6M CO5 L5

*** End ***